Historical Geology Assessment

Geology of the Lake Whatcom basin is dominated by a thousands-of-feet-thick sequence of 50 million year-old deformed and fractured sedimentary rock strata (the Chuckanut Formation) which overlies much older metamorphic rock (Darrington phyllite) (Map F-1). The Chuckanut Formation outcrops in the northern three-quarters of the planning area while Darrington phyllite is exposed on Anderson Mountain and the south end of Stuart Mountain (Map F-1). Geologically recent deposits of glacial materials cover the bedrock at the north (Carpenter Ck./Squalicum Mtn.) and south (Cain Lake vicinity) ends of the basin.

Tilting and folding of Chuckanut Formation rock strata, plus scouring by repeated glacier advances/retreats, has created broken terrain and rock outcrops. Down-cutting by major streams has resulted in deep, steep-walled inner gorge landforms. Large, ancient (dormant), deep-seated failures have occurred in the Chuckanut Formation, but historic failures have been almost exclusively "shallow-rapid" events that become channelized debris flows if they reach a stream. The sandstone rock is brittle and may weather relatively rapidly when exposed.

Darrington phyllite is a metamorphic rock of variable hardness and resistance to weathering. Phyllite terrain has a generally smooth appearance despite evidence of ancient, deep-seated failures, and the presence of incised stream channels and inner gorges. Historic instability has occurred on incised channel/inner gorge slopes, and as relatively small, deep-seated events primarily within the deposition zone of ancient failures.

Glacial deposits, consisting of dense till (hardpan) and loose outwash materials, occur on gentle to moderate slopes in parts of the basin. These slopes are stable, except on the over-steepened banks of incised stream channels.